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## SYNOPSIS OF WEST COAST *CERCERIS*<sup>1</sup> (HYMENOPTERA, CERCERIDÆ)

BY NATHAN BANKS  
Holliston, Mass.

The first species of *Cerceris* described from this area was *C. californica* by Cresson in 1865. Since then Provancher described one, Viereck one, Mickel five, and the author several. Having received some additional material, I have put all in synoptic form. Several species described by Viereck and Cockerell from New Mexico occur in southern Arizona, and in a few cases in southern California, so I have included such as I know to occur in southern Arizona.

It has been impossible to be sure in every case to associate the sexes correctly; in some instances either of two species might belong to one of the opposite sex from what is now known, therefore I have described such forms separately.

In the males I find that the shape of the middle lobe of the clypeus and the breadth of the hair-lobes are very useful. The sculpture of the enclosure, though usually fairly constant in each species, is sometimes variable, so of less value than previously considered by writers. The sculpture of the pygidium is less variable, but often similar in several species; the general shape of the pygidium, and the crest of hair at sides quite constant, although often differing in the sexes.

Length and density of hair are also of use. There is little to be found (so far) in the wing, the length of the pedicel of the second submarginal cell is different in a few

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species. The pale markings are more constant than in many insects; these, and the punctation, and the shape of the clypeal process in the female are of basic importance.

In several of the species in this paper, *isolde*, *femurrubrum*, *orestes*, *thione*, the lower part of the outer edge of the lateral lobes is fitted to the edge of the eye for a short distance; this occurs in some of the European species and is the normal condition in the subgenus *Apiratrix*.

Some have used the number of spines on the hind tibia as of specific value, but in our species it is not dependable. In a few species the males have the ends of the last ventral ridge developed, and provided with blunt teeth. In these species the lateral lobe does not reach the eye.

The two subgenera may be distinguished by the following:

- |   |                    |
|---|--------------------|
| At base of second ventral segment is a slightly raised area, often semicircular in outline; the stigma of the fore wings is brown to almost black ..... | <i>Apiratrix</i> . |
| No raised area at base of second ventral segment; stigma yellowish to ferruginous .....   | <i>Cerceris</i> .  |

#### SUBGENUS CERCERIS Latr.

The majority of the species, and all of the larger ones belong to this subgenus.

#### CERCERIS FEMALES

1. No distinct clypeal process with a free apical edge, or not raised above general surface ..... 2  
A distinct clypeal process, with free apical edge well raised above the general surface of clypeus ..... 6
2. No band on second segment of abdomen ..... 3  
A yellow band on part or whole of second segment ... 4
3. Face below antennæ pale yellowish, except the narrow black lower border of clypeus; supra-clypeal carina very long and high, bands on fourth and fifth segments quite broad ..... *orestes*  
Face below antennæ with much black; the hump on

clypeus and the outer part of lateral lobes only yellowish, lateral face-marks mostly above clypeus.

*insolita*

4. Hind femora wholly pale; abdomen with all segments broadly yellow; venter mostly yellowish, spots on vertex ..... *arno*  
Hind femora black, venter also, and other femora mostly black ..... 5
5. Small; with pale band on third ventrite, scape wholly black; first segment small, not equal one-half of second behind; abdomen coarsely punctate, enclosure mostly smooth, with median groove ... *melanthe*  
Rather large; scape with pale spot below; first segment of abdomen broad, equal to one-half of second behind, enclosure roughened, irregularly striate; abdomen finely punctate ..... *denticularis*
6. Clypeal projection in form of a large cone, the base occupying almost all of clypeal surface, tapering above to a point; wings brown, enclosure large, with a smooth pale spot in middle ..... *macrosticta*  
Clypeal projection not in form of such a large cone 7
7. The projection, short, edge concave, with two membranous plates hanging beneath; propodeum with or without lateral stripes ..... *femur-rubrum*  
The projection has no such plates pendent beneath 8
8. Clypeus with one or two small pointed teeth a little above lower margin of clypeus ..... 9  
The process on clypeus is of other shape ..... 10
9. Two teeth on clypeus; very large species, with very broad face ..... *grandis*  
One tooth only on clypeus; rather small species; face of normal width ..... *athene*
10. All femora largely black, venter black, clypeal process twice as broad as long, not divided, black beneath. *nigrescens*  
Femora not black, if partly black then venter has much yellow ..... 11
11. Very large, almost wholly yellowish or rufous, last joint of antennæ wholly black; second submarginal cell very large, sides strongly convex, pedicel not

- one-third of height of cell; last segment of abdomen with a sharp tooth each side before end; clypeal process divided into two horns ..... *frontata*  
 Not so wholly yellowish or rufous species; last joint of antennæ partly rufous; second submarginal cell not so large; scape (first joint) of antennæ not twice as long as third joint ..... 12
12. Clypeal process broad, divided into two divergent horns ..... 13  
 Clypeal process without divergent horns ..... 15
13. The separation of horns reaches nearly to base of process ..... 14  
 The separation reaches hardly more than one-half the length of process; hind femora dark toward tip; enclosure obliquely striate ..... *eurymele*
14. Venter black, second segment with a median carina; all femora yellow or rufous; enclosure finely, longitudinally striate ..... *sexta*  
 Venter with much yellow, no carina on second segment; front and mid femora black on base; enclosure more coarsely and obliquely striate *sextoides*
15. Body largely rufous or yellowish; wings quite dark; clypeal process small, lower margin broadly emarginate, and a sharp tooth each side on clypeal margin under the outer corners of clypeal process; enclosure rufous, punctate on sides ..... *fidelis*  
 Enclosure black, striate ..... 16
16. Hind femora, and others, a nearly uniform rufous or yellow ..... 17  
 Hind femora pale yellowish, tip black, other femora black on base; scape black above ..... 18
17. Tip of clypeal process well raised above clypeus, sides parallel; enclosure obliquely striate ..... *nasica*  
 Clypeal process depressed, slightly tapering, tip hardly its breadth above clypeal surface; enclosure longitudinally striate, scape pale above ..... *vicina*
18. Clypeal process, but little elevated, much broader than long, margin broadly truncate ..... *varians*  
 Clypeal process about as long as broad, subtriangular, tapering to black, well elevated ..... *æqualis*

## MALES

1. Hind femora pale on base, with a large dark mark near tip; clypeus truncate below ..... 2  
Hind femora all dark, all pale, or pale on apical part ..... 8
2. Yellow bands on abdomen so broad on sides as to leave only a median triangular dark spot in front; clypeus with three teeth below; pygidium partly yellow; hair-lobes little more than twice their breadth apart, venter with complete yellow bands 3  
Yellow bands on abdomen not so much broadened on sides, always some black laterally; pygidium black ..... 5
3. Yellow bands on abdomen deeply indented with black in front; hair on propodeum moderately long; hair-lobes not as broad as clypeal truncation *sextoides*  
Yellow bands on abdomen scarcely indented with rufous, wide throughout; hair on propodeum very long; hair-lobes about as broad as clypeal truncation ..... 4
4. First segment black, pale on sides; head without rufous; bands on abdomen broad, scarcely indented; enclosure obliquely longitudinally striate; teeth of clypeus small ..... *eurymele*  
First segment rufous, bands sometimes indented with rufous; back of head with some rufous; enclosure obliquely striate on sides, behind with short cross striæ crossing the median groove; teeth of clypeus large ..... *nasica*
5. Hair-lobes not twice their breadth apart ..... 6  
Hair-lobes about three times their breadth apart ... 25
6. Hair on face (from side) very long; clypeal margin evenly truncate below, no teeth; pygidium plainly narrowed toward base ..... *varians*  
Hair on face very short; clypeal margin with three teeth below; pygidium not narrowed toward base; first segment broader than long ..... 7
7. Enclosure strongly longitudinally striate; second segment band scarcely broader than others; face plainly narrowed above ..... *æqualis*

- Enclosure rather large, swollen, smooth, with mid groove, a few short striæ in each corner; band on second segment much broader than others; face but little narrowed above ..... *posticata*
8. Second abdominal segment without a pale band, hind femora almost wholly brown to black ..... 9  
 Second segment with distinct pale band ..... 10
9. Face almost wholly pale; band on first segment, pale marks on pronotum, scutellum and often on sides of propodeum; venter with some yellowish *orestes*  
 Face with only narrow lateral marks pale, no band on first segment, no marks on scutellum nor propodeum, lower face with much silvery hair.  
*semiatra*
10. A tuft of yellowish spreading hair at each side of pygidium; third submarginal cell with rounded sides; stigma and marginal cell elongate ..... 11  
 No such tuft of hair each side of pygidium ..... 12
11. Face with dense, erect, very long hair, longer than scape, much long hair elsewhere; yellow bands do not cover the segments at sides; venter black; propodeum and abdomen (except bands) black.  
*englehardti*  
 Face with very short hair, scarcely noticeable, yellow bands (except one on second segment) usually cover entire side, venter spotted, thorax and abdomen usually partly rufous ..... *fidelis*
12. Enclosure with a smooth pale spot in middle; pygidium broader than long; scape and hair lobes long.  
*macrosticta*  
 No such pale area in enclosure, pygidium longer than broad ..... 13
13. Hind femora wholly black at least on inner side, the black of several segments hardly reaches margin ..... 14  
 Hind femora paler, rufous or yellowish on apical part ..... 15
14. Venter black; the yellow of bands leaves a black crescent ending shortly before lateral margin.  
*denticularis*

- Venter with yellow spots; yellow of bands leave a somewhat diamond-shaped black mark open only to middle part of front margin ..... *completa*
15. Hair-lobes less than the breadth of one apart; yellow of clypeus comes to a point in middle of front edge; femora rufous, body black with yellowish marks; abdomen strongly convex transversely ..... *thione*  
 Hair-lobes plainly separated by more than breadth of one of them ..... 16
16. Tip of antennæ black; third joint slender, longer than fourth, marginal cell and stigma very slender; second submarginal cell with curved sides; legs mostly yellowish to rufous; second submarginal cell very large, face much narrowed in middle ..... 17  
 Tips of antennæ rufous; face less narrowed; second submarginal cell normal size, pedicel full one-half of cell ..... 18
17. Third antennal joint a little longer than the first (scape); face narrowed above, near end of lateral face marks becoming wider again, upper side of lateral lobes curved, supraclypeal mark not above antennæ; hair on vertex, thorax and abdomen grey to reddish brown, on face yellowish white; second submarginal cell very large, sides much curved, pedicel about one-third of cell height ..... *orphne*  
 Third antennal joint not as long as the long scape; face still more narrowed above than in *orphne*; upper side of lateral lobes straight; hair on body mostly white to light grey, ventral fringes white, face with snow-white hair; second submarginal cell still larger, sides more curved, and pedicel less than one-third of cell height ..... *frontata*
18. Third antennal joint much longer than the fourth, and a little longer than the first (scape), fourth joint three times as long as broad; enclosure obliquely striate; clypeus impressed above the slightly raised three-toothed margin; pygidium with parallel sides; abdomen black, with subequal bands above and lateral spots below ..... *sexta*

- Third joint not longer than scape; fourth joint not nearly three times as long as broad ..... 19
19. Yellow of clypeus ends below in a point; upper side of the triangular lateral lobes is straight; little if any rufous on propodeum or abdomen ..... 20
- Yellow of clypeus ends broadly below, and at lower margin; often some rufous on thorax and abdomen; lateral lobes with upper side curved ending in a black comma-mark ..... 21
20. A row of white hair across lower face from eye to eye; hair-lobes very narrow; spots on scutellum; enclosure smooth, but anterior corners with a few oblique striæ; sometimes lateral spots on propodeum; venter with little if any yellow.
- femur-rubrum*
- No row of white hair across lower face; hair-lobes moderately broad, yellow; no spots on scutellum; enclosure with median groove and each side with coarse oblique striæ; venter with yellow bands; sternum with rather long, erect white hair ... *vicina*
21. First segment of abdomen plainly longer than broad; face with lateral lobes wholly pale yellowish; propodeum reddish, smooth and shining; clypeal margin slightly rounded, pygidium slender, sides nearly parallel; lateral spots on venter *ferruginor*
- First segment not plainly longer than broad; the dorsal surface usually broader than long ..... 22
22. Third joint of antennæ plainly longer than fourth, fourth and fifth both rufous; clypeus projecting below nearly the height of lateral lobes in a short truncate margin; pygidium not twice as long as broad in middle, hind tibia has two basal teeth with an elongate base ..... *isolde*
- Third joint of antennæ barely if any longer than fourth, ventral punctate areas reduced to a narrow row in the middle ..... 23
23. Venter black, trace of rufous on the sides; clypeal process truncate; propodeum, first, and base of second segment reddish, abdomen slender, the punctate side-lobes of venter much swollen so that



- they project below, viewed from side; the ridge on sixth ventral forms a sloping rounded lobe with several teeth on the margin ..... *calodera*
- Venter with yellow spots or bands; the swollen areas are scarcely noticeable from side view; clypeal projection very faintly tridentate, or the margin at least biconcave ..... 24
24. Lateral face marks reach little above antennæ; rather broad at end, supraclypeal mark also short; scutellum black, or at most with small spot each side, pygidium slender, sides nearly parallel; lateral lobe of sixth segment broadly rounded behind and with two large, black, blunt teeth; and usually some smaller connecting row or ridge with small teeth; the lateral lobe of fifth segment, though fairly long, also shows some small teeth near inner end and hind border ..... *populorum*
- Lateral face marks reach toward top of eyes, supraclypeal mark extends to anterior ocellus; sometimes spots or band on vertex, and a curved mark back of each eye; scutellum usually broadly yellowish or rufous; propodeum usually wholly rufous, or black; enclosure large, smooth; pygidium with the sides converging toward tip; the lateral lobe of the venter of sixth segment is broad, convex, and shows several rounded teeth, three on the outer corner; lobe of fifth segment has no distinct teeth. *illota*
25. Enclosure longitudinally striate ..... *nigrescens*  
 Enclosure mostly obliquely striate ..... *abbreviata*

*Cerceris macrosticta* V. & C.

Viereck and Cockerell, Jour. N. Y. Ent. Soc., 12: 133, 1904.

A female from Tucson, Arizona, July (Bequært).

*Cerceris frontata* Say

Say, West. Quart. Rept., 2: 80, 1823.

Leconte Ed., 1: 167, 1859.

From Flagstaff, Arizona, 29 July (Carpenter); Pal-

merlee, Arizona (Biedermann), and Colton, California (Pilate).

*Cerceris sexta* Say

Say, Bost. Jour. Nat. Hist., 1: 382, 1837.

Leconte Ed., 2: 763, 1859.

This belongs to the group of *frontata*, but I have not seen it west of Wyoming and Utah.

*Cerceris sextoides* sp. nov.

Female. In general similar to *sexta* (*biungulata*) and to *eurymele*, but the clypeal process is more widely emarginate than in either, and the horns of the process much more slender and sharply pointed, and not at all angulate at the base of the emargination. The markings are similar to those species, the abdomen with a broad band on each segment, emarginate in the middle of the front; the venter is black on the first and basal half of the second segment. Front and mid femora partly black (not in *sexta*) and the hind femora partly dark above. The hair and sculpture are about as in *eurymele*.

The male is more slender than in *eurymele*, the second and following segments hardly more than two-thirds as broad as in *eurymele*, and the yellow bands are more narrow; the venter has yellow bands or lateral spots, the hair lobes not as broad as the clypeal truncation. The femora of all legs have some black, the hind femora with a large black spot at tip.

Length of ♀ 12 mm., of ♂ 11 to 12 mm.

Holotype ♀ from Lone Tree, Yakima River, Wash., 30 June 1882 (S. Henshaw); allotype and paratypes from Nelson's, Yakima River, 4-5 July, and Camp Umatilla, 26 June, both Washington and by Mr. Henshaw; also from Davis, Calif., 1 July (Bohart), and one "California." Type M.C.Z. no. 23547.

*Cerceris grandis* Bks.

Banks, Bull. Amer. Mus. Nat. Hist., XXXII: 423, 1913.  
Type from Ft. Yuma, Arizona.

*Cerceris eurymele* sp. nov.

Female. Black, face below antennæ pale yellowish, the front edge of the clypeal process slightly reddish, the lateral spots extend a little above antennæ, basal half of mandibles yellowish, a large elongate spot back of the eyes and basal joint of antennæ yellow, the next four joints and the last joint pale rufous, others dull black; two spots on pronotum, tegulæ, small spot on pleura below tegulæ, postscutellum, and a stripe each side on propodeum yellow. Abdomen with two large spots, almost touching, on first segment; second, third, and fourth with a broad band, occupying almost entire width except a rather square black space in middle of front margin, band on fifth segment also broad, but without indentation; sides of apical segment yellow, and venter with four very broad bands; tip below with some long brown hairs each side; legs mostly yellowish, hind femur with a small dark mark before tip on inner side, hind tibiæ with larger dark mark at tip; extreme bases of front and mid femora black; front basitarsus with six long even bristles on outer side. Wings yellowish hyaline, dark streak beyond the reddish stigma.

Body densely and rather finely punctate; hair on head moderately short, on thorax above shorter, longer hair on back of head, lower pleura, and sides of propodeum. Clypeal process very large, on the plan of *C. sextoides*, but the basal part is much longer, and the lateral parts not so divergent, the tips being very blunt. Enclosure strongly, obliquely striate, rather more coarsely than in *sextoides*, basal segment broader than long, second segment hardly twice as broad behind; pygidium very finely granulate, tip rounded, at base fully once and a half as wide as at tip, sides with fringe of yellow hair.

Male very similar, spot back of eyes small, spots on propodeum sometimes small, yellow bands on abdomen broadly and shallowly emarginate in front, black spots on legs larger; hair on head and thorax very long; pygidium with parallel sides, truncate at tip, and less than twice as long as broad; face of moderate width, mid lobe of clypeus one and one-half times as high as broad, lower

margin with three teeth; hair lobes as broad as the truncate edge (broader than in *sextoides*), from side the clypeus is somewhat depressed below, and above very faintly convex, and with much rather long hair.

Length of ♀ 15 mm., of ♂ 13 mm.

The female holotype from Davis, Calif., 30 June (Bohart), M.C.Z. no. 23546, and males from El Cajon, Calif., May 1 (Van Duzee), and Santa Barbara, Calif., 18 July (Cockerell), Riverside, Calif., 4 Oct. (Melander). Very similar to *C. sextoides* but the clypeal process is different, the males with broader hair-lobes, longer hair on body, and the yellow bands on abdomen broader in the middle.

#### *Cerceris englehardti* sp. nov.

Male. Body finely punctured; entire body densely clothed with erect, very long hair, white on face, brown on vertex and mesonotum, rest of thorax grey but white on sternum, first segment of abdomen grey hair above, other segments yellowish, venter with dark grey on extreme side, most of venter without hair. On the face some hair is as long as the scape, on vertex longer than scape, on mesonotum somewhat shorter, but on propodeum again longer, quite long above on first segment, but shorter on other segments.

Black, with yellowish markings; face pale yellowish, extending higher than usual, supraclypeal mark reaching the anterior ocellus; scape pale below, dark above, third joint mostly pale all over, beyond the joints are black, but the extreme tip of last is rufous; third joint nearly as long as the scape; pronotum with two yellow spots, a tiny spot on middle of postscutellum, rest of thorax black; no spot on first segment of abdomen, second segment with band very broad on sides, reduced to a line in middle, other segments with band less broad and broadly emarginate in front. Legs yellowish to rufous, front femora black except tip; second femora with black mark at posterior base; third tibia rufous on apical half, basal half paler. Wings quite clear but broadly darkened along outer margin beyond marginal cell, stigma yellow, veins dark.

Clypeus a little higher than broad, swollen on upper part, lower edge with three black teeth; lateral lobes higher than broad, upper edge curved, for a short distance the lobe is against the eye, hair-lobes no broader than lateral lobe and several times their breadth apart, of short white hair. From above the sides of head behind eyes are incurved; hind ocelli fully as near eyes as to each other, enclosure smooth, with a shallow median groove. First segment of abdomen one and one-half times as broad as long, more than one-half of width of second segment behind, no ridge separates dorsum from basal slope. Second segment little longer than third, about as broad as third. Last segment with dense, spreading hair each side of pygidium, latter nearly twice as long as broad in middle, tip truncate, almost as broad as at middle, with fine punctures. Venter shining black, second ventrite longitudinally sculptured, but punctate on sides as other ventrites; the tip of subgenital plate is more narrow than the tip of pygidium, and the corners only slightly projecting, not spine-like. Hind tibia has seven spines above in the row. Wings with a long and clear marginal cell, second submarginal cell large, the pedicel fully one-third of height of cell, the end of second discoidal is further beyond end of cell than in most species.

Length 16 mm.

A male from St. John, Arizona, 27 July 1931 (G. P. Englehardt). Type M.C.Z. no. 27638.

#### *Cerceris orestes* sp. nov.

Female. Black with white to pale yellowish marks, coarsely punctate much as in *C. insolita*. Face below antennæ mostly white, the separated spots of *insolita* are here united, lower edge of clypeus black, supra-clypeal mark reaches only to antennæ, rest of high carina black, lateral face-marks reach plainly above antennal fossæ, tip truncate. Lower margin of clypeus slightly convex, with six blunt, black teeth, two near middle closer together; white of clypeus broader than high, the comma-mark above middle, lower third of upper side of lateral lobe against eye; interantennal carina very high and

short. Scape white below, above black and black out to the rufous last joint; hind ocelli nearer to eyes than to each other, small pale spot back of upper eye.

Two pale spots on pronotum, a band on scutellum, and a long stripe on propodeum, this has a recurved hook at upper end just below sides of enclosure, latter is coarsely punctate, much as on propodeum. First segment of abdomen with a pale yellowish band, sometimes with sides extended forward; third segment wholly pale above, fourth and fifth segments with a broad emargination in front; venter with two or three yellowish spots each side; pygidium fully as long as broad in middle, ends equals two-thirds of middle width.

Legs mostly black, front and mid femora pale on outer half below, basitarsus pale, rest brown, hind femora pale at tip, tibiæ pale beneath, tarsi dark.

Wings hyaline, fore wings with a broad dark costal streak, covering marginal cell and widened a little toward tip, second submarginal cell broad and low, the pedicel almost as long as height of cell.

Face with some white hair, vertex with some dark, but most of body with little and short as in *C. insolita*.

Length of female 9.5 to 11 mm.

Male. Similar to female, but face wholly pale below the antennæ and lateral face-marks not extending so high. The clypeus is higher than broad, a little swollen, lower edge quite short, and with two stout, blunt teeth near middle. Mandibles almost entirely black, extreme tip rufous; third antennal joint plainly a little longer than fourth. Other marks much as in female except on propodeum only a small spot or dot pale, and on venter are two or three pale bands; the wings have the same dark costal streak; enclosure mostly punctured as on propodeum; pygidium much as in female, fully twice as long as broad in middle, tip truncate, fully equal base and about two-thirds of middle width, sides a little curved, with large punctures and black hair; end of subgenital plate with a fairly long, sharp spine each side.

Length of male 6 to 8.5 mm.

From Patagonia, Arizona, 1 to 4 August (Bequaert). Type M.C.Z. no. 27637.

*Cerceris insolita* Cress.

Cresson, Proc. Ent. Soc. Phila., 5: 129, 1865.

One female from Tucson, Ariz., July (Bequaert).

*Cerceris solidaginis* Rohw.

Rohwer, Can. Ent., 1908: 323.

This species, separated on males from *femur-rubrum* on having the enclosure with large punctures, not smooth in middle, and no pale lateral mark on propodeum. Of five females before me two have the stripe on propodeum, are larger, broader, three without the stripe are smaller, less broad, and therefore have a slightly less broad clypeal process. In the numerous males most are without the stripe on propodeum, two with only a dot; the sculpture of the enclosure in most of the specimens is more or less irregular. I doubt if it is a distinct species, but the name may be of use for a lower category. Specimens of each form were taken at Tempe on the same dates.

*Cerceris femur-rubrum* Vier. & Ckll.

Viereck and Cockerell, Jour. N. Y. Ent. Soc., 12: 135, 1904.

No record from California, but since it is very common at Tempe, Arizona, it may occur in southern California. It is structurally much like the eastern *C. compacta*, but much more yellow.

*Cerceris fidelis* Vier. & Ckll.

Viereck and Cockerell, Jour. N. Y. Ent. Soc., 12: 132, 1904.

Have none from California, but it is so common at Tempe and Tucson, Arizona, it quite possibly occurs in southern California.

*Cerceris orphne* sp. nov.

Male. Face yellowish, not reaching above antennæ, lateral face-marks truncate above, with moderately short whitish hair, denser long dark hair on vertex. Face broad below, plainly narrowed at antennæ. From side the clypeus is swollen above, below depressed and the free

edge is raised a little; this process is short, truncate, each side is thickened and almost makes a blunt tooth at outer corner; hair-lobes almost as broad as lateral lobes; face rather finely and closely punctate; scape of antennæ yellow below, rufous above, second and third joints rufous, beyond becoming deep black, last joint without the rufous. Pronotum with a large yellow spot on each side; band on postscutellum and a short lateral yellowish stripe on propodeum each side; enclosure mostly smooth, a broad median groove, some very short striæ in anterior angles; propodeum with longer and paler hair than on mesonotum. Abdomen rather slender; first segment rufous in middle, yellow on sides, other segments with moderately broad bands on sides, emarginate in middle; venter black, with four yellow spots each side, mostly tapering to point at inner end. Second ventrite longitudinally sculptured; pygidium broad, sides diverging above, one and one-half times as long as broad in middle, with numerous small punctures. Legs pale, the inner base of front and mid femora ferruginous, the hind femora with apical half a little darker than rest; hind tibiæ not darkened near tip, tarsi pale; teeth on hind tibiæ above much sloping. Wings fumose darker on upper part and near tip, stigma and marginal cell elongate; second submarginal about as large as in *frontata*, the sides much curved, pedicel hardly one-third of height of cell.

Length 16 mm.

One male from Jemez Springs, New Mexico, 2 July (Englehardt). Type M.C.Z. no. 23536.

#### *Cerceris æqualis* Prov.

Provancher, Add. Hym. Can., 417, 1888.

Female. Black, bases of mandibles, spot on each side of lateral lobe, large one on clypeal process, basal joint of antennæ below, stripe each side by eyes, spot behind eyes, yellowish. Two small spots on pronotum, tegulæ, postscutellum, two spots on first segment, bands on second, third, and fourth, narrow in middle, broad on sides, all about equal, venter with three bands, and last segment with two spots, all yellowish or yellow.



Clypeal projection from above almost triangular, below it is black, and a spine each side on margin of clypeus; enclosure moderately large, rather finely longitudinally striate; pygidium about two and one-half times as long as wide at base, much narrowed toward the tip, dark fringe each side. Front and mid femora dark on base, hind femur and tibia dark on tip, hind tarsus very dark, except a narrow line above on basitarsus. Wings with dark front part, most prominent beyond the yellowish stigma. Body rather finely punctate, hair on head and thorax moderately long.

Male very similar in coloration, but the bands on abdomen are less broad on sides, and the spots on first segment are smaller. The clypeal truncation has three teeth, the hair-lobes about as broad as the truncation; face, from side, is rather short-haired; enclosure longitudinally striate as in the female; pygidium broadly truncate at tip, its base scarcely more narrow, coarsely punctate, one and a half times as long as broad.

Length of ♀ 12 mm., of ♂ 10 mm.

Type of Provancher was simply California, a male. I have identified as it a male from San Mateo Co., Calif., 20 June, and a female from Big Flat, Coffee, Trinity Co., Calif. The description of Provancher would fit the male of *C. varians* just as well.

This species is close to *C. varians*, but the clypeal process is much more elevated, and there is no mark on the propodeum.

In male the face has shorter hair than *varians*, there are teeth on the truncation of clypeus, and the pygidium is scarcely more narrow at base.

#### *Cerceris abbreviata* Bks.

Banks, Can. Entom., 1919, 84.

Specimens from Yakima, Little Spokane, Camp Umattilla, all Washington, in July (Henshaw), and Carrville, Trinity Co., Calif., 27 May.

#### *Cerceris completa* Bks.

Banks, Can. Entom., 1919, 83.

Have seen only the type from Claremont, Calif.

*Cerceris nigrescens* Smith

Smith, Cat. Hymen. Brit. Mus., IV: 466, 1856.

Specimens from Wawawai (W. M. Mann); Wenass Valley, 7 July (Henshaw); Spokane, 21 June (Henshaw); Ainsworth, 20 July (Henshaw); and Gulf of Georgia (A. Agassiz), all in Washington. Also occurs in Montana, British Columbia, and eastward.

*Cerceris varians* Mickel

Mickel, Nebr. Univ. Studies, XVII: 336, 1917.

Paratype before me from Donner Lake, Calif.; others from Mammoth, 17 Sept.; Sequoia National Park, 25 July; and San Mateo County, 20 June, all in California.

*Cerceris munda* Mickel

Mickel, Nebr. Univ. Studies, XVII: 337, 1917.

Described from Sacramento, Calif. I have not seen it.

*Cerceris thione* sp. nov.

Male. Black; markings pale yellowish, the face verging to white; most of mandibles, basal joint of antennæ, a small spot back of eyes, pronotum wholly, tegulæ, spot below tegulæ, scutellum, postscutellum and a fairly broad stripe each side on propodeum, pale yellowish; rest of antennæ brown, but rufous below for a few joints and the last joint also rufous. Each segment of abdomen with an apical band, that on second plainly broader than those behind, none much widened on sides; venter with lateral yellow spots on third, fourth, and fifth segments. Legs yellowish, front and mid femora rufous on base, hind femora rufous, darker on lower edge; more than apical half of hind tibiæ black, hind tarsi nearly black, except basitarsi. Wings almost hyaline, brown, beyond the yellowish stigma, the tip more broadly brown.

Hair of face short, white, vertex and thorax densely dark-haired, on propodeum long and white, that on abdomen above longer than usual. Body densely and rather finely punctate.

Mid lobe of clypeus projects triangularly below, and the white hair-lobes are much less than their breadth

apart, from side the clypeus is evenly convex; enclosure mostly smooth and shining, sides punctate; basal segment of abdomen much broader than long, fully one-half the apical width of second segment, the abdomen rather broad; pygidium very broad, hardly one and a half times longer than broad, tip truncate, sides somewhat convex; the hind tibiæ are more swollen toward tip than usual, and the outer spines are very prominent.

Length 10.5 mm.

From Colton, Calif. (Pilate), Eddy Collection, 24 August and 4 September, and Claremont, Calif. (Baker). One specimen from Colton is only 8 mm. long. Type M.C.Z. no. 23593.

*Cerceris arno* sp. nov.

Female. Largely yellowish, face wholly, basal half of the mandibles, and basal joint of antennæ, yellow; vertex with a yellow spot each side from top of eye toward the middle, a very large yellow spot back of eye. Pronotum wholly, tegulæ, a spot below it, yellow, below latter is a rufous stain; scutellum, postscutellum, and most of the sides of propodeum yellow, leaving only a median dark stripe and this is partly rufous; basal segment of abdomen reddish at base, rest yellow, broad bands on next four segments, that on second with a median dark spot in front, the third and fourth acutely emarginate in front with dark, the fifth entirely yellow; the terminal segment yellow, except the rufous to brown pygidium; venter almost wholly yellow, some segments narrowly dark at base; legs almost wholly yellowish to rufous, the tarsi, especially the hind tarsi, darker, and a faint dark mark at tip of hind tibiæ.

Wings yellowish hyaline, yellow-brown in front, stigma yellowish.

Face with much silvery white hair, not very long, but dense, moderately short hair on vertex, thorax, and abdomen. Punctures dense, but not coarse. Mid lobe of clypeus somewhat swollen above, much broader than high, below with a broad truncation; enclosure mostly transversely striate; basal abdominal segment much broader than long; pygidium nearly three times as long as broad

at tip, latter somewhat rounded, wider at base, at widest part (above middle) it is twice as wide as at tip, bordered with yellow fringe.

Length 10.5 mm.

From Colton, Calif. (Pilate), Eddy Collection, and mountains near Claremont (Baker). Type M.C.Z. no. 23542. One specimen has the sternum yellowish, and one has a reddish mark on the mesonotum.

*Cerceris californica* Cress.

Cresson, Proc. Ent. Soc. Phila., 5: 128, 1865.

Described from a male, possibly related to *C. denticularis*. But the legs brownish at base, four anterior femora ferruginous, posterior pair rufopiceous, tibiæ and base of tarsi yellow, is not like *denticularis*, nor is the unusually small first segment tinged with ferruginous at tip.

*Cerceris denticularis* Bks.

Banks, Bull. Mus. Comp. Zool., 51: 113, 1917.

Specimens from Umatilla, Oregon, and Yakima and Spokane, Wash.

*Cerceris posticata* Bks.

Banks, Ent. News, 1916, 64.

Described from the Jemez Mts., New Mexico (Woodgate).

*Cerceris vicina* Cress.

Cresson, Proc. Ent. Soc. Phila., 5: 120, 1865.

Male from Raton Pass, New Mexico, 26 July (James).

*Cerceris nasica* V. & C.

Viereck and Cockerell, Jour. N. Y. Ent. Soc., 12: 132, 1904.

Jemez Springs, New Mexico, 2 July (Englehardt); 29 June, 2 July (Woodgate).

*Cerceris athene* sp. nov.

Female. Black; clypeus and bases of mandibles rather rufous, sides of face yellow, back of eyes, also somewhat rufous, a yellow spot near upper end of eye; on vertex

back of ocelli are two transverse yellow marks, almost united to form a curved band; basal joint of antennæ rufous, beyond brown; pronotum with the spots almost united; tegulæ rufous on inner part, yellow on outer half; yellow spot just below tegulæ, and below that is a rufous stain; scutellum, postscutellum, and a stripe each side on propodeum, yellow.

First segment of abdomen fully one-half yellow; second yellow, with a median indentation; third broad on sides, narrow in middle; fourth and fifth bands fainter and very narrow; second and third segments of venter yellowish. Legs almost entirely rufous, tarsi dark; wings brownish along front and more definite near tip.

Middle clypeal lobe swollen, and ending in a small median cone-like point, no free edge; enclosure smooth in middle, punctate on sides; pygidium with tip truncate, base about as wide as tip, sides curved so that the widest part is a little above the middle, it is fully one and two-thirds as broad as at tip, rather densely granulate; basal segment of abdomen fully one-half of the second at tip.

Length 10.5 mm.

From Claremont, Calif. (Baker). Type M.C.Z. no. 23537. *C. thione* may be the male.

#### *Cerceris melanthe* sp. nov.

Female. Black; face below antennæ, base of mandibles, pronotum, tegulæ, postscutellum and a spot on each posterior side of propodeum, pale yellowish. On abdomen an apical band on each segment; that on first narrow, that on second covering about half of segment, angularly emarginate in middle, those on other segments less wide, but covering about one-half of segment, and more deeply emarginate in front; venter with a large pale yellow spot on each side of third segment. Femora almost wholly shining black, front and mid femora pale at extreme tips, hind trochanters pale, rest of front and mid legs pale, in hind legs fully the apical half of the tibiæ and the tarsi black. Wings hyaline, stigma reddish, beyond is a broad brown streak.

Body rather coarsely punctate, much as in the section with the dark stigma; hair on face short and silvery, but long on edges of lateral lobes, that on vertex dark, on pleura and propodeum longer and pale, abdomen scarcely hairy above, below with a band of rather short hairs on each segment.

Face moderately broad below, no clypeal process, and the broad middle lobe scarcely reaches below the lateral lobes; enclosure with a median groove and the sides roughened, but hardly striate; basal joint of abdomen about as long as broad, not half the apical width of second segment; pygidium elongate, narrowed at each end, more so at base, fully two and a half times as long as broad in middle; the front tarsi (except basal joint) are more broad than usual; teeth on upper edge of hind tibiæ very strong.

Length 6 mm.

From Apache Co., Santa Catalina Mts., Ariz., 25 July, 5500 ft., J. Bequaert collector. Type M.C.Z. no. 23539.

#### *Cerceris calodera* sp. nov.

Male. Small, body slender; face fairly broad, barely narrowed at middle; face pale yellowish, with silvery hairs, and white hair-lobes; lateral face marks and supra-clypeal mark reach only a little above antennæ. Clypeus swollen, lower margin slightly concave each side and projecting a little in middle, the process broad and truncate. Antennæ short, thick toward the tip, under side of tip rufous, scape pale. Pronotum broadly yellow, the spots nearly touching; mesothorax black, coarsely punctate, two small rufous spots, one on tubercle, other below wing-base; a faint spot each side on scutellum, band on post-scutellum; propodeum rufous, black in middle and enclosure, latter broad, smooth.

Abdomen slender, first segment rufous, its dorsum plainly broader than long; second segment rufous on base, behind is a broad yellow band, narrower bands on other segments, but broader on sides; abdomen from side shows the lateral lobes of venter roundedly projecting below more than in allied species; venter black, a trace of

rufous on sides. Each ventral segment, back of second, shows a bristly punctate lobe each side, and connecting punctate ridge in middle. On sixth segment the ridge is elevated, each side into a broad lobe, with several fairly large teeth grouped around the outer corner. Pygidium slender, sides nearly parallel, and nearly twice as long as broad in middle, tip truncate. Legs almost wholly yellowish, tips of hind tibiæ dark, and hind tarsi dusky.

Length 9 mm.

One from Jacumba, Calif., 12 August 1917 (W. M. Wheeler). Type M.C.Z. no. 27622.

#### *Cerceris illota* sp. nov.

Male. Face yellowish, the lateral and supraclypeal marks tend to extend upward toward top of eyes and the anterior ocellus, sometimes connected with spots or band on vertex; with short, silvery hair, hair-lobes no broader than lateral lobes. Usually a comma-shaped rufous spot back of each eye, and sometimes a rufous band across vertex from eye to eye, often absent, or two spots. Antennæ with scape pale, second and third joints usually rufous, beyond brown, but tip of last joint rufous, third not longer than fourth. Pronotum with the yellow spots meeting; mesonotum black, stained with rufous, or all rufous, a yellow spot under base of fore wings; scutellum usually rufous, postscutellum yellow; pleura and propodeum black to rufous, yellow stripe each side on propodeum; enclosure fairly broad, smooth, but with one or two punctures in upper corners.

First segment of abdomen rufous, dorsum plainly broader than long; second segment more than twice as broad behind as first, sides broadly convex, a nearly square rufous or black spot indenting the broad yellow band covering the rest of the segment; other segments completely covered with yellow band, sometimes slightly indented in front with rufous; from above the segments show the denticulate appearance at outer hind corners. Venter black, with pale yellowish, punctate spots on side narrowly connected across middle. Pygidium one and one-half times as long as broad in middle, tip usually a

little narrowed. Sixth ventrite has a lobe each side tipped with several black (or rufous) teeth, many blunt.

Legs yellowish to rufous, hind femora darker than others, front and mid femora with some large spots of white; hind tibiæ dark beyond middle, hind tarsi dusky.

Wings dark along costa and towards tip as usual.

Length 9 to 11 mm.

From Tucson, Arizona, August (Bequaert), also Patagonia, Arizona, 20 August (Bequaert), and Colton, Southern California, 16 August (Pilate); also two from Palmerlee, Arizona (Biedermann). Type M.C.Z. no. 23541.

#### *Cerceris isolde* sp. nov.

Male. Face wholly yellowish up to upper edge of antennal fossæ, with short silvery hair, most dense toward lower margin; hair-lobes yellowish, short; antennæ mostly rufous out to seventh joint, thence black, but the last joint is rufous, and scarcely curved. Face not very broad below and little narrowed above; lateral lobes high, outer side straight, and fully one-third its length against eye. Clypeus projects below the lateral lobes and ends in a truncate process. Head back of eyes rufous.

Pronotum rufous, with two yellow spots above; mesonotum black, closely and coarsely pitted; scutellum broadly and a line on postscutellum yellow; propodeum rufous, the enclosure moderately large, mostly smooth, but a few punctures on sides; median groove on propodeum very distinct, lying in a depression; mesopleura rufous, sternum black.

Abdomen rather slender; dorsum of first segment almost twice as broad as long; second segment twice as broad behind, in front rufous as the first, behind with broad yellowish band, four similar bands behind occupying all of dorsum, last segment also yellow, all with fine whitish hair; pygidium one and one-fourth times as long as broad in middle, tip broad, sides little curved, little narrowed above. Venter with yellow bands, broad on sides, second ventrite yellowish; on the sixth there is a cross-ridge, but without teeth. Legs also wholly yellowish to rufous, hind tibia near inner tip faintly darkened.



Wings darkened in front and towards tip; marginal cell quite long and narrowed toward tip; pedicel of second submarginal fully one-half of cell's height.

Length 10 mm.

From Palmerlee, Arizona, Biedermann coll. Type M.C.Z. no. 23540.

*Cerceris ferruginor* V. & C.

Viereck and Cockerell, Jour. N. Y. Ent. Soc., 12: 134, 1904.

Described from New Mexico; I have one from Tucson, Arizona, July (Bequaert). The unusual length of the first segment readily distinguishes it.

*Cerceris populorum* V. & C.

Viereck and Cockerell, Jour. N. Y. Ent. Soc., 12: 135, 1904.

Tucson, Arizona (F. H. Snow).

*Cerceris semiatra* sp. nov.

Male. Deep black; from middle of third abdominal segment above to tip of abdomen yellow, and a narrow yellowish band on these segments below. On face is a narrow orbital streak, at top occupying hardly one-half of space between eye and antenna, and below running out before reaching the mandibles; the yellowish hair-lobes are short; face below antennæ with much rather long hair, in most views silvery. The antennæ (including scape below) are black. On the pronotum there is a trace of a narrow, yellowish line each side; no other pale on head nor thorax. Legs black, front and mid tibiæ show a pale streak on front side, tarsi more brown, but with white hair appear paler.

Fore wings with usual dark spot at tip; stigma and the veins before it yellow, veins beyond and behind stigma brown.

Face with nearly parallel sides, higher than broad; clypeus quite large, rounded above and on sides, below truncate, and not as coarsely punctate as rest of face. Antennæ as long as width of head, broadened toward tip,

third joint short, but a little longer than fourth, a high carina between bases of antennæ. Mesonotum coarsely punctate, enclosure broad and smooth, propodeum very coarsely punctate. First abdominal segment with nearly parallel sides, not one-half the width of hind margin of second segment, latter quite long as usual, sides rounded in to front, surface coarsely punctate, third segment about as broad as second, others shorter; pygidium fully one and one-half as long as broad, tip truncate and more than one-half of base, sides slightly curved; ventral segments without definite fringes.

In fore wings, the third submarginal cell has an oblique base and sinuous tip, and is a little longer than broad, and beyond this cell the marginal cell tapers a little to tip.

Length 10 mm.

One male from Patagonia, Arizona, 20 August (Bequaert). Type M.C.Z. no. 27620.

#### SUBGENUS APIRATRIX SHEST.

This subgenus is easily separated not only by the original character of a small basal raised area on the second ventrite, but also by the darker color of the stigma, brown to black against the yellow to ferruginous of the typical forms; the lateral lobes reach the eye higher than in many of the true *Cerceris*, and in most of the species there is a mesosternal tubercle in the female.

#### APIRATRIX—FEMALES

1. Propodeum and base of abdomen rufous; face with three pale spots, lateral lobes black; clypeus with a small median, pointed cone ..... *conifrons*  
Propodeum and base of abdomen not rufous, no pointed cone on clypeus ..... 2
2. Front femora impressed on outer dark part when seen from above ..... 3  
Front femora not impressed behind, convex; end of clypeus upraised a little, so with free, dark edge 4
3. Clypeus plainly swollen above, but not quite in a cone; white of clypeus not nearly twice as broad as long; apex of pygidium more than one-half its

- greatest width; hind femora more than one-half black below ..... *complanata*
- Clypeus evenly convex; white of clypeus fully twice as broad as long; apex of pygidium not one-half its greatest width, hind femora not so much black.
- vanduzeei*
4. Scape of antennæ pale above and below; often two spots on vertex; marks mostly white; enclosure punctate on sides ..... *acanthophila*
- Scape of antennæ dark above ..... 5
5. Lateral face marks separated from clypeus by black; enclosure with transverse striæ ..... *vierecki*
- Lateral face marks reach yellow of clypeus ..... 6
6. Enclosure nearly cross-striate; clypeal lobe short, truncate; face-markings yellowish; pale abdominal bands deeply indented with black; yellow spots on venter ..... *minax*
- Enclosure largely smooth, not cross-striate ..... 7
7. Enclosure smooth, no punctures; face with much white hair below; clypeal lobe broadly emarginate in middle; yellow of clypeus separated from lateral face marks by a black line; pygidium not especially slender nor narrowed more than usual toward tip; hair-lobes white, broad, partly on clypeus ..... *snowi*
- Enclosure mostly smooth, but with some striæ or punctures; yellow of clypeus adjoins lateral face-marks ..... 8
8. Enclosure with rather fine oblique striæ each side of median groove; pygidium not particularly slender near tip; clypeal margin scarcely elevated.
- hesperina*
- Enclosure mostly smooth but fine transverse striæ in upper part, the groove with lines across; pygidium very slender and apical third more narrowed; clypeal margin plainly a little elevated ..... *convergens*

## APIRATRIX—MALES

1. First and second segments entirely jet black, rest of abdomen with yellow bands; hind legs almost

- wholly black; lateral lobes black; hair-lobes so broad they almost touch each other ..... *seminigra*  
 Second segment with a pale band ..... 2
2. Propodeum and first segment reddish, face below antennæ wholly pale ..... *conifrons*  
 These parts not reddish ..... 3
3. Clypeus wholly black as also supraclypeal area; hind femora black almost to tip ..... 4  
 Clypeus, at least, with a large pale spot ..... 5
4. Enclosure partly punctate; lower face densely white-haired ..... *snowi*  
 Enclosure smooth, corners finely striate; lower face not especially densely hairy ..... *convergens*
5. Lateral lobes at least partly black ..... 6  
 Lateral lobes wholly pale ..... 8
6. A supraclypeal pale mark; clypeus higher than broad; enclosure cross-striate; body very slender. *arizonella*  
 No supraclypeal mark, at most a dot, body less slender, enclosure not cross-striate; clypeal lobe with three teeth or lobes ..... 7
7. Lateral lobes partly pale; enclosure smooth; teeth of clypeus blunt, rounded; hair-lobes small ... *erionigoni*  
 Lateral lobes black; no spot on pleura, teeth sharp, mid tooth rounded ..... *hesperina*
8. Scape pale above as below; marks white, face rather narrow; lower edge of clypeus trilobed. *acanthophila*  
 Scape dark above ..... 9
9. Hind femora with apical third beneath pale, venter with some yellowish; two oblique stripes on propodeum ..... 11  
 Hind femora with less than one-fourth pale; venter black, unspotted ..... 10
10. Clypeus about as broad as high, broad on lower margin, comma-mark a little below middle of clypeus, clypeal edge short, truncate; hair-lobe not equal breadth of clypeal lobe, marks snow-white. *huachuca*

- Clypeus plainly higher than broad, comma-mark plainly above middle, a noticeable mass of silvery hair on lateral lobes and lower clypeus somewhat obscuring the hair-lobes; marks yellow, hair-lobes nearly as broad as clypeal lobe ..... *complanata*
11. Spots on scutellum and first segment; no pale marks on propodeum; enclosure with oblique striæ; pygidium oblong ..... *cockerelli*
- Band on scutellum and first segment; two oblique stripes on propodeum behind; enclosure transversely striated; pygidium slender, about equally narrowed at each end ..... *vanduzeei*

*Cerceris (Apiratrix) convergens* V. & C.

Viereck and Cockerell, Jour. N. Y. Ent. Soc., 12: 136, 1904.

Several from Jacumba, Calif., 12 to 17 August (Wheeler); Patagonia, Ariz., 20 Aug. (Bequaert), and Apache Cp., Santa Catalina Mts., Ariz., 25 July, 5500 feet (Bequaert).

*Cerceris (Apiratrix) huachuca* sp. nov.

Male. Black, with snow-white marks. Face moderately narrow, white, with short white hair, longer at lower margin; clypeus scarcely higher than broad, comma-mark near middle; clypeal edge short, truncate, hair-lobes not quite as broad as clypeal edge; third joint of antennæ barely longer than fourth, scape above dark, two spots on pronotum, not meeting; two on scutellum, not far apart; line on postscutellum, two small spots, touching on first segment of abdomen; rather broad band on second segment, not broadened on sides; narrow band on tip of next four segments; pygidium twice as long as broad in middle, a little broader above, tip truncate; venter black. Very short pale hairs on abdomen, longer on first segment above, darker, but rather short, on mesonotum.

Hind femora black almost to tip, second femora and first black behind on basal two-thirds; enclosure smooth.

Length 5 mm.

From Patagonia, Arizona, 20 August (Bequaert). Type M.C.Z. no. 27636.

*Cerceris (Apiratrix) eriogoni* V. & C.

Viereck and Cockerell, Jour. N. Y. Ent. Soc., 12: 139, 1904.

Two from Tempe, 31 July, and 2 August (Bequaert).

*Cerceris (Apiratrix) acanthophila* Ckll.

Cockerell, Entom., 1897, 135.

Several from Arizona, Tempe, August 1 and 2 (Bequaert); August 5 (Wheeler); Tucson, July (Bequaert); Tucson, September 1-5 (Carpenter). Two females, 4 August, from Tempe, agree with the description of *C. chilopsidis* Vier. & Ckll. and are, I believe, the female of *acanthophila*.

*Cerceris (Apiratrix) vierecki* sp. nov.

Female. Black. Face with a large pale yellowish spot on middle lobe of clypeus, a spot on outer side of each lateral lobe, a supra-clypeal spot, and an elongate spot each side by eye. This leaves on each side a black streak between the supra-clypeal mark and the eye-spot running down on the lateral lobe. Basal joint of antennæ pale beneath, also most of the mandibles, and a small spot behind each eye; most of the antennæ pale below and brown above. Pronotum with a spot each side, tegulæ, spot each side on scutellum, line on postscutellum, all yellowish; sometimes a spot below tegulæ.

Abdomen with a narrow apical band on the first segment, a broad band on the second, broadly emarginate in front; third and fourth segments with a more broadly emarginate band, very narrow in the middle; fifth with a narrow apical band, all yellowish; venter unspotted. Legs very pale, the femora largely black, front and mid pairs with apical fifth pale; hind tibiæ with large black spot over apical half, and the tarsi (except basitarsi) brown.

Wings faintly infumate, stigma brown, and a broad brown streak beyond. Body densely and rather coarsely punctate. Hair on face pale and very short, that on vertex and thorax longer and darker; propodeum and basal segment with long white hair, rest of abdomen hardly hairy above, and few hairs in the ventral bands.

Face moderately broad, border of mid lobe truncate; enclosure with middle groove, and coarsely transversely ridged; basal segment of abdomen broader than long, almost one-half the apical width of second segment; pygidium broader at base than at tip, about three times as long as wide at tip, sides slightly bowed.

Length 6 mm.

From Tempe, Arizona, 1 August (Bequaert). Type M.C.Z. no. 23544.

*Cerceris (Apiratrix) conifrons* Mickel

Mickel, Trans. Amer. Ent. Soc., XLII: 410, 1916.

Specimens from Tempe, Ariz., 31 July (Bequaert); described from Nebraska and Wyoming, having spread so far may extend into California.

*Cerceris (Apiratrix) cockerelli* Vier.

Viereck, Proc. Acad. Nat. Sci. Phila., 1902, 731.

Described from La Jolla, Calif.

*Cerceris (Apiratrix) complanata* Mickel

Mickel, Nebr. Univ. Studies, XVII: 340, 1917.

Described from Auburn, Calif. Specimens from Three Rivers, Calif., 12 to 14 July; and Antioch, Calif., in May and June.

*Cerceris (Apiratrix) snowi* Bks.

Banks, Can. Entom., 1919, 84.

Based on males from Tucson, Ariz. (Snow), and San Diego Co., Calif. (Van Duzee). I have also a male from Jacumba, Calif., 12 to 17 August (Wheeler), and females from Jacumba, Calif., 12 to 17 August, which are evidently this species.

They are larger than the males; agree with males in lacking a supraclypeal mark, but the clypeus is almost wholly pale, the lower edge of mid lobe black, and forming a slightly bilobed rim; lateral lobes with long silvery hair. Two small spots on scutellum (often absent in the male), a spot below tegulæ (usually absent in male), a spot on the pleural spine; basal segment with a small transverse line or two small spots (as in one of the male types); rest

of abdominal marks are like those of the male: that on second broad, that on third broken in one female (as in all males). Legs have black femora, excepting tips of the front and mid pairs. The enclosure is smooth. The pygidium is long, almost to a point below, and with sides much bowed; the front tarsi are flattened.

Length of ♀ 10 mm.

*Cerceris (Apiratrix) vanduzeei* Bks.

Banks, Bull. Mus. Comp. Zool., LXI: 114, 1917.

Types from San Diego Co., Calif., June (Van Duzee), and also from Claremont, Calif. (Baker).

*Cerceris (Apiratrix) arizonella* sp. nov.

A small very slender male with supraclypeal area wholly pale and wholly united with lateral face-marks, the latter do not extend down to mandibles, as the lateral lobes are black, antennæ pale rufous, scape beneath white; two white spots on pronotum, nearly meeting; dot on tubercle, two spots on scutellum, and a line on postscutellum, a spot on first segment of abdomen, fairly broad; band on second, and narrow, white bands on those behind, except that on the sixth segment is very faint; venter black.

Except face much like *acanthophila*, but more slender. Face more narrow than that species, the clypeus higher than broad, from side, evenly convex, lower margin convex; hair-lobes very short; antennæ quite slender, third joint much longer than fourth, last joint but little curved; mesonotum coarsely pitted, with little very short hair; propodeum roughened somewhat transversely, enclosure with transverse striæ. First segment of abdomen about as broad as long, sides slightly rounded, all segments coarsely punctate, third and fourth segments of equal width, pygidium small and slender, base about one-half width, tip about half the width of base, rounded, surface with a few large punctures.

In the fore wings the third submarginal cell is no longer than broad, beyond it the marginal cell is narrowed toward tip.



Length 5 mm.

One male from Tempe, Arizona, 1 August (Bequaert).  
Type M.C.Z. no. 23538.

*Cerceris* (*Apiratrix*) *seminigra* sp. nov.

Male. Deep black; first and second segments of abdomen jet black, no pale marks, third to sixth segments inclusive entirely yellow above. Venter with yellow spots on sides of segments four to sixth; face with lateral marks touching a large spot on clypeus, lateral lobes and face above clypeus black; long silvery hairs on face-marks and lower face; antennæ rufous, darker toward tip, scape below pale. Two small spots on pronotum, tegulæ, two fairly large spots on scutellum, all pale yellowish. Hind legs almost wholly black, a small pale streak at base of tibia above, front and mid legs wholly black on femora; tibiæ black except yellow on upper side; tarsi pale. Wings slightly fumose, darker in front toward tip, stigma brown.

Face rather wider above than below, clypeus rounded above and on sides, almost as long as broad, below convex; the white hair-lobes very broad, almost meeting in middle; a moderately high carina between antennæ; anterior ocellus hardly larger than others, and about one and one-half diameter from them. Antennæ short, not equal width of head, broader towards tip, third joint slender, much longer than the fourth. Hair on head and mesonotum plainly shorter than usual; enclosure smooth, with distinct mid groove. Abdomen rather short, first segment broader than long, fully one-half of hind width of second segment, latter not as long as usual, but broader in front at attachment, third segment scarcely broader than second. Pygidium about one and one-half times as long as broad, tip very broad, truncate, nearly as broad as the base, slightly broader in middle, surface minutely granulate, and with about ten large punctures. Much long white hair on underside of last three segments. Fore wings have the marginal cell a little narrowed toward tip, second submarginal with very short pedicel, third a little longer below than broad, outer side bent a little near end, not sinuous.

Length 7 mm.

One male from Patagonia, Arizona, 20 August (Bequaert). Type M.C.Z. no. 27621.

*Cerceris minax* Mickel

Mickel, Nebr. Univ. Studies, XVII: 339, 1917.

I have a paratype from Auburn, Calif.; also described from Sacramento.

*Cerceris hesperina* Bks.

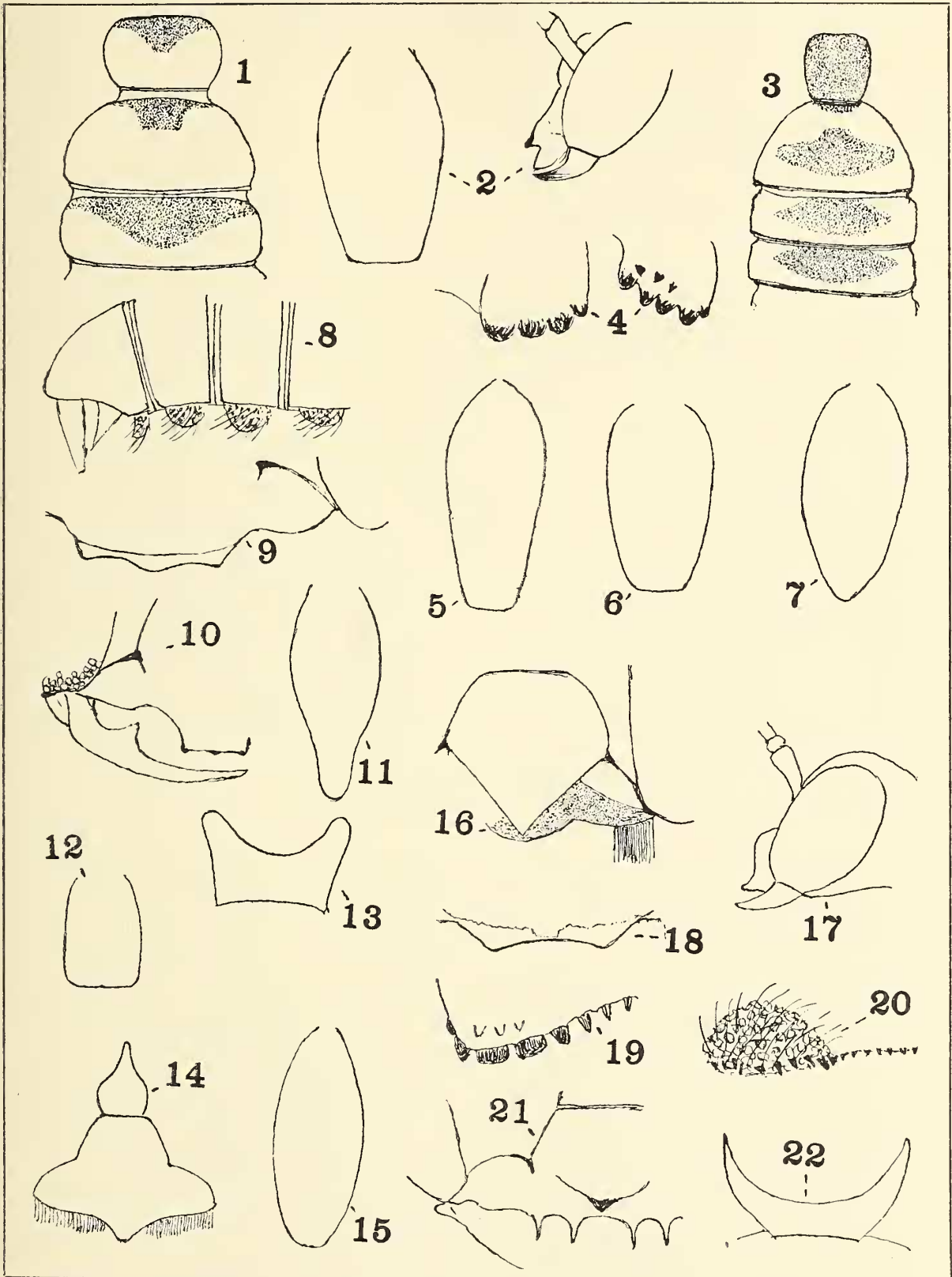
Banks, Bull. Mus. Comp. Zool., LXI: 115, 1917.

Specimens from Ainsworth, 20 July and Yakima City, 2 July, both Wash. (Henshaw).

*C. pudorosa* Mickel (Nebr. Univ. Studies, XVII: 338, 1917) appears to be a synonym; *hesperina* has several months priority.

EXPLANATION OF PLATE I

- Fig. 1. *Cerceris athene*, base of abdomen.
- Fig. 2. *Cerceris athene*, pygidium, side of head.
- Fig. 3. *Cerceris completa*, base of abdomen.
- Fig. 4. *Cerceris illota*, teeth on lobe of sixth ventrite.
- Fig. 5. *Cerceris arno*, pygidium.
- Fig. 6. *Cerceris vierecki*, pygidium.
- Fig. 7. *Cerceris snowi*, pygidium.
- Fig. 8. *Cerceris calodera*, side-view of abdomen.
- Fig. 9. *Cerceris illota*, clypeus.
- Fig. 10. *Cerceris isolde*, clypeus.
- Fig. 11. *Cerceris convergens*, pygidium.
- Fig. 12. *Cerceris æqualis*, pygidium.
- Fig. 13. *Cerceris eury mele*, clypeal process from above.
- Fig. 14. *Cerceris thione*, clypeus from in front.
- Fig. 15. *Cerceris melanthe*, pygidium.
- Fig. 16. *Cerceris femur-rubrum*, clypeus of male.
- Fig. 17. *Cerceris complanata*, head from side.
- Fig. 18. *Cerceris populorum*, edge of clypeus.
- Fig. 19. *Cerceris populorum*, teeth on lobe of sixth ventrite.
- Fig. 20. *Cerceris illota*, lobe of fifth ventrite.
- Fig. 21. *Cerceris athene*, clypeus.
- Fig. 22. *Cerceris sextoides*, clypeal process from above.



BANKS—CERCERIDÆ